



Smallpox

Information for the Public

What should I know about smallpox?

Smallpox is caused by the variola virus that emerged in human populations thousands of years ago. Smallpox infects only humans, and the last naturally acquired case of smallpox in the world occurred in 1977.

Is the smallpox virus still around?

Except for laboratory stockpiles, the variola virus has been eliminated. However, there is concern that the variola virus could be used as an agent of bioterrorism. For this reason, government and public health officials are taking precautions for dealing with a smallpox outbreak and have developed detailed nationwide smallpox response plans.

If smallpox is released into the environment, how long will it survive?

The smallpox virus is fragile. In laboratory experiments, 90% of aerosolized smallpox virus dies within 24 hours; in the presence of ultraviolet (UV) light, this percentage would be even greater. If an aerosol release of smallpox occurs, 90% of virus matter will be inactivated or dissipated in about 24 hours.

What are the signs and symptoms of smallpox?

The symptoms of smallpox begin with high fever (101-104°F), head and body aches, and sometimes vomiting. These symptoms generally appear 7 to 17 days following exposure. A rash, most prominent on the face, arms, and legs, follows in two to three days and will usually spread to all parts of the body within 24 hours. As the rash appears, the fever usually falls and the person may start to feel better. The rash starts with flat red bumps that evolve at the same rate. The raised bumps become pus-filled blisters that crust early in the second week. Scabs develop and fall off after about three weeks, leaving pitted scars.

How do people get smallpox?

Generally, direct and fairly prolonged face-to-face contact is required to spread smallpox from one person to another. A person with smallpox is sometimes contagious with onset of fever, but the person becomes most contagious when the rash appears. Once the rash appears the person is usually very sick and not able to move around in the community. The infected person is contagious until the last smallpox scab falls off.

Contaminated clothing or bed linen can also spread the virus. Special precautions need to be taken to ensure that all bedding, clothing, and contaminated surfaces of patients are cleaned with disinfectants like bleach and quaternary ammonia.

Smallpox is not known to spread by insects or animals. It is rare for smallpox to be spread by virus carried in the air in enclosed settings, such as buildings, busses, and trains.

What should people do if they suspect they have been exposed to smallpox or suspect that smallpox has been released in their area?

Report suspected cases of smallpox or suspected intentional release of smallpox to your local health department. The local health department is responsible for notifying the state health department and local law enforcement. The state health department will notify the Centers for Disease Control and Prevention (CDC), Michigan State Police Emergency Management, and the Michigan office of the Federal Bureau of Investigation (FBI).

What is the difference between smallpox and chickenpox?

Smallpox is sometimes confused with chickenpox, but several features of these diseases are significantly different:

- The initial symptoms of smallpox are much more severe than those of chickenpox i.e., high fever, severe muscle aches.
- Smallpox rash is most common on exposed portions of the body: face, forearms, wrists, palms, lower legs, feet, and soles. Chickenpox is most common on covered areas of the body.
- Smallpox rash lesions tend to be at the same stage of development, and there is only one eruption of pox lesions. With chickenpox, it is common to have more than one eruption of pox lesions and the lesions may be in different stages of maturation. Smallpox lesions tended to be deeper in the skin than chickenpox lesions, hard to the touch, and the vesicles were tough to break.

What should you do when you have been exposed to smallpox?

Your doctor or the public health department will instruct you to minimize contact with others. If you have contracted the disease, symptoms will appear in 7 to 17 days after exposure. Individuals should stay at home and monitor themselves daily for the development of a temperature higher than 101°F (38°C). Immediately contact your local health department to receive guidance on how to isolate yourself (either at home or a designated care site) to minimize the risk of exposure to others. Public health authorities will discuss with you the need for vaccination.

How can we stop the spread of smallpox after someone comes down with it?

Patients will be placed in medical isolation so that they will not continue to spread the virus. In addition, people who have come into close contact with smallpox patients will be notified to receive a vaccination and to be closely watched for symptoms of smallpox. If the vaccine is given within four days after exposure to smallpox, it can lessen the severity of illness or even prevent it. Vaccine and isolation are the strategies for stopping the spread of smallpox.

Is there any treatment for smallpox?

There is no proven treatment for smallpox, but research is ongoing to evaluate new antiviral agents. Patients with smallpox can benefit from supportive therapy, such as intravenous fluids, medicine to control fever or pain, and antibiotics for any bacterial infections that may occur.

Is smallpox fatal?

The majority of patients who contract smallpox recover, but death may occur in up to 30% of cases. For people exposed to smallpox, the vaccine can lessen the severity or even prevent illness if it is given within four days after exposure. Vaccine administered after exposure has been shown to provide significant protection against death from smallpox.

Will antibiotics protect me against smallpox?

Smallpox is caused by a virus. Antibiotics, such as ciprofloxacin, will not fight the smallpox infection. Getting the vaccine within a few days of exposure to the virus may lessen the severity or prevent disease.

What is the smallpox vaccine, and is it recommended?

The vaccine against smallpox is made with a live virus related to the smallpox virus called vaccinia virus. It is not made with smallpox virus. In the absence of known cases of naturally-occurring smallpox, it is not recommended because the risks from the current vaccine outweigh the risk of getting the disease.

What are the risks of receiving the smallpox vaccine?

Some people with conditions such as eczema or immune system disorders have a higher risk for having complications from the smallpox vaccine. Adverse reactions have been known to occur that range from mild rashes to rare fatal encephalitis and disseminated vaccinia. Smallpox vaccine should not be administered to persons with a history or presence of eczema or other skin conditions, pregnant women, or persons with immunodeficiency diseases or persons with suppressed immune systems as occurs with leukemia, lymphoma, generalized malignancy, or solid organ transplantation. People with heart conditions are also cautioned.

If I am concerned about a smallpox attack, can I go to my doctor and request the smallpox vaccine?

In the United States, routine vaccination against smallpox ended in 1972 when the disease was fully controlled. The vaccine is not recommended for routine use. The CDC maintains an emergency supply of vaccine. State and local public health departments stockpile vaccine as needed to protect residents in the event of a smallpox release.

If people got the vaccination in the past when it was used routinely, will they be immune?

Not necessarily, since the level of immunity, if any, among persons who were vaccinated before 1972 is uncertain. These persons are assumed to be susceptible because it is not known how long immunity lasts. Most estimates suggest immunity from the vaccination lasts three to five years. This means that nearly the entire U.S. population has partial immunity at best. Immunity can be boosted effectively with a single revaccination.

Prior infection with the disease grants lifelong immunity.

Should you get the smallpox vaccine if you're immuno-compromised?

No, immuno-compromised individuals should not get the smallpox vaccine, unless there is a smallpox outbreak and the patient's physician and public health authorities have discussed the risks and benefits with the patient. Vaccinations could cause deaths in people with weakened immune systems, those undergoing chemotherapy, organ transplant patients, and those with

AIDS. There is no need to take that risk until there is evidence of an outbreak. As an “insurance policy,” the United States has the vaccine ready if needed.

Are some people still receiving the smallpox vaccination today?

Yes, vaccination is recommended for laboratory workers and others who directly handle virus cultures or contaminated animals. Vaccination is not recommended for people who do not directly handle these virus cultures or who do not work with contaminated animals.

Are health responders being vaccinated against smallpox?

Vaccinating key public health and medical personnel will ensure Michigan is well prepared to quickly respond in the event of a smallpox disease outbreak. The first group of individuals considered for voluntary pre-event smallpox vaccination include the vaccinators themselves, public health response teams to be mobilized in the case of smallpox reintroduction, and health care response teams at designated hospitals. Smallpox vaccine has also been offered to other health workers, emergency responders, police and fire fighters in Michigan who will be called upon to respond in the event of a smallpox outbreak.

Are there risks to health care volunteers receiving the smallpox vaccine?

The smallpox vaccine is very effective at preventing disease, however, it does have some significant risks. Out of every one million people vaccinated, one or two may die as a result of life-threatening reactions to the vaccine. In the absence of actual smallpox disease, careful screening of potential vaccine recipients is essential to ensure that those at increased risk for adverse reactions do not receive the vaccine. If smallpox becomes a threat, all persons exposed and potentially exposed should be vaccinated. Individuals who should NOT be vaccinated as a pre-event measure include people with the following conditions AND those who live with someone who has such a condition:

- Expectant mothers or nursing mothers
- People with eczema or atopic dermatitis, or a history of either
- People being treated for cancer
- People who are HIV-positive
- People who have had an organ transplant

Individuals who should not receive the smallpox vaccine also include:

- People using steroid eye drops
- People diagnosed as having heart conditions
- People who have a moderate or severe short-term illness
- Anyone who is less than 18 years of age

Also, if three or more of the following risk factors are present, an individual should not receive the smallpox vaccine:

- high blood pressure
- high blood cholesterol
- diabetes
- a first-degree relative who had a heart condition before the age of 50
- cigarette smoking

If offered the smallpox vaccine, individuals should tell their immunization provider if they have any of the above conditions, or even if they suspect they might.

Again, people who have been directly exposed to the smallpox virus should get the vaccine, regardless of their health status.

Is every American going to be vaccinated for smallpox?

If there is an outbreak of smallpox, vaccinations of people may only be needed in the area around the cases of smallpox to contain the spread. If health officials are not able to contain the outbreak, vaccination of a wider group of people may be required. U.S. health officials are increasing the stock of smallpox vaccine to be ready to use as needed.

If the decision is made that everyone needs to be vaccinated, how will this occur and who will pay for it?

There will be a systematic administration of the vaccine in coordination with public health that will be paid for by the United States government. The Michigan Department of Community Health and the Michigan State Police Emergency Management Division have been closely working with the CDC, local health departments, and other state and local agencies to develop such distribution plans for pharmaceuticals.

How many people would have to get smallpox before it is considered an outbreak?

One suspected case of smallpox is considered a public health emergency. Smallpox surveillance in the United States includes detecting suspected cases, making a definitive diagnosis with rapid laboratory confirmation at CDC, and preventing further smallpox transmission. A suspected smallpox case should be reported immediately by telephone to state or local health officials. They should immediately obtain advice regarding isolation of the patient or patients, and on laboratory specimen collection.

What should be done if there is a smallpox outbreak?

If an outbreak occurs, the first step will be to properly isolate those with the disease. Health officials will be diligent regarding use of adequate isolation facilities and precautions. All people with close contact to the patient will be vaccinated as soon as possible. The vaccine helps the body develop immunity to smallpox. It was successfully used to eradicate smallpox from the human population.

Can the spread of the disease be prevented?

Vaccine and isolation are the strategies for stopping the spread of smallpox. People who have come in close contact with smallpox patients will be notified to receive vaccination and be closely watched for symptoms of smallpox. If the vaccine is given within four days of exposure, it can lessen the severity of illness or even prevent it. The U.S. government's smallpox emergency response plan includes provisions for smallpox vaccinations and response by smallpox healthcare teams.

What is Michigan doing to prepare for a smallpox outbreak?

The Michigan Department of Community Health is working closely with physicians and laboratories to make them aware of the signs and symptoms of smallpox and to be able to identify smallpox. Increased surveillance by local health departments is incredibly important in our efforts to detect bioterrorism, investigate potential cases and ensure that patients will be cared for properly with minimal risk to other individuals. Hospitals, health care providers, and health departments throughout the state are prepared to follow the protocols and recommendations for care set by the Centers for Disease Control and Prevention to ensure patient safety.

For more information on smallpox and smallpox vaccination:

- Contact your local public health department. Check <http://www.malph.org/page.cfm/108/> for your jurisdiction. A list of local public health departments is also available at http://www.michigan.gov/documents/June2003LHDLList_69658_7.pdf
- Visit the Michigan Department of Community Health website <http://www.michigan.gov/ophp>
- Visit The Centers for Disease Control and Prevention (CDC) website, <http://www.bt.cdc.gov/agent/smallpox/index.asp>
- Call the Centers for Disease Control and Prevention Public Response Service Hotline:
English: 1-888-246-2675
Español: 1-888-246-2857
TTY: 1-866-874-2646